

Figure 1. EBELADS Schematic: (1) Beam source; (2) Electron beam; (3) Beam-generated plasma; (4) Direction of external magnetic field; (5) Bias voltage (+ or -); (6) Conducting electrode; (7) Substrate; (8) Deposited film; (9) Positive ion; (10) Electron and/or negative ion; (11) Neutral radical; (12) Target; (13) Target power supply; and (14) Sputtered target material.

FIGURE 1.

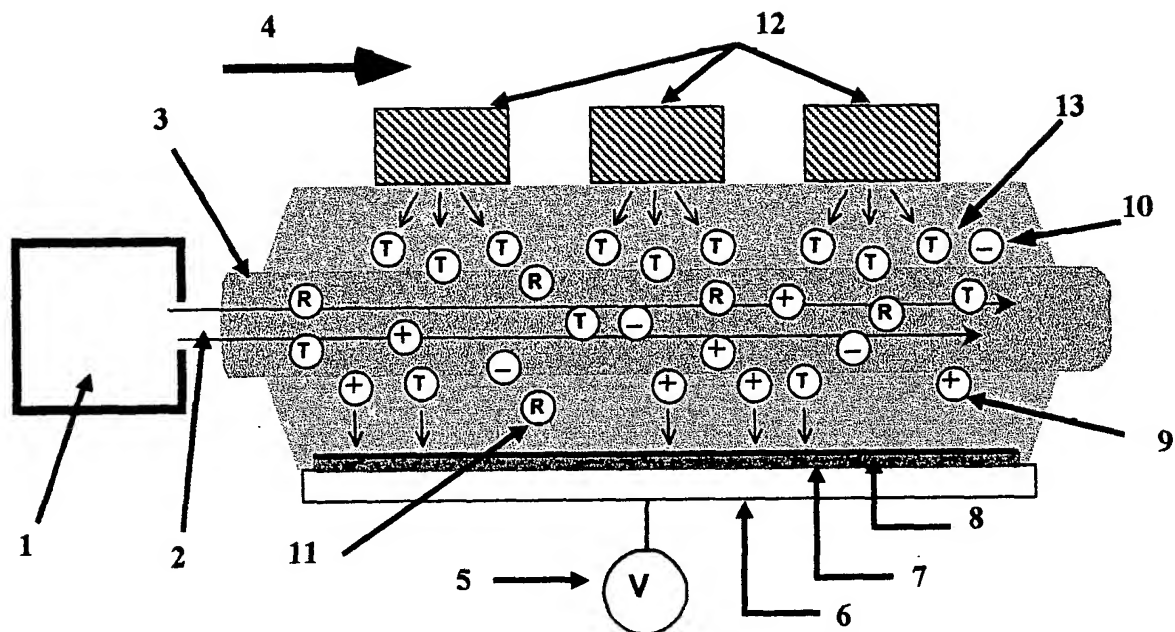


Figure 2. EBELADS Schematic: (1) Beam source; (2) Electron beam; (3) Beam-generated plasma; (4) Direction of external magnetic field; (5) Bias voltage (+ or-); (6) Conducting electrode; (7) Substrate; (8) Deposited film; (9) Positive ion; (10) Electron and/or negative ion; (11) Neutral radical; (12) Film material source; and (13) Film material vapor.

FIGURE 2.

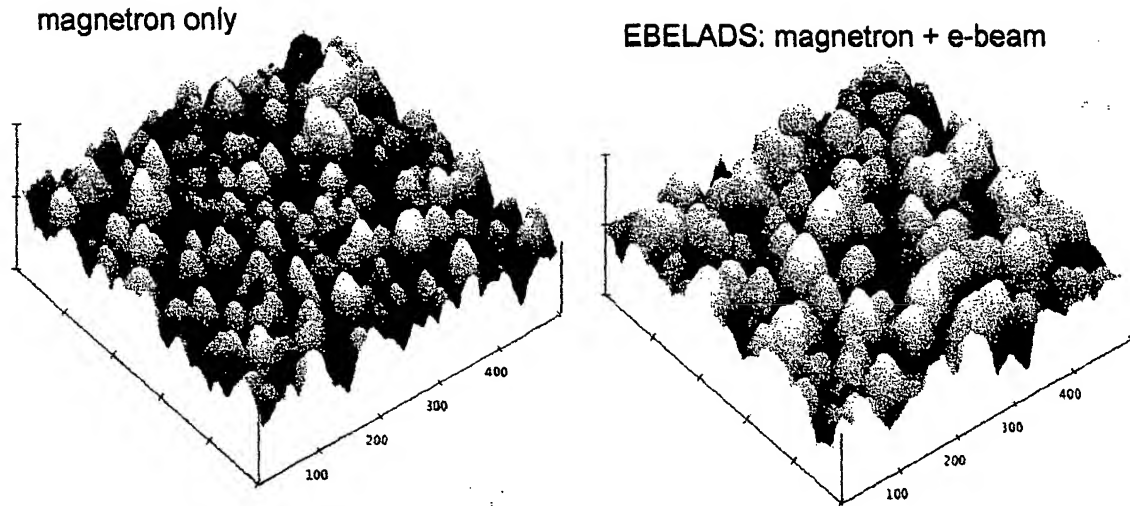


Figure 3. Atomic force micrographs of TiN films produced using only a magnetron (left) and using the EBELADS configuration of Figure 2, where one magnetron was employed as the material source (right). In each case, the sample is subject to the same bias and time-averaged ion bombardment, so as to properly compare the results.

FIGURE 3.